

SCOPE OF WORK

SURVEY CONTROL AND LOCATION DATA

Revised 10-27-99

I. GENERAL

- A. This work shall consist of the Land Surveying needed to set accurate horizontal control points and base lines and vertical elevation bench marks. This will also include the Land Surveying needed to locate the physical features of the ground, utilities, and other topographic data as necessary under this contract.
- B. All work shall be done by or under the direction of a Surveyor licensed to practice in the State of Washington.
- C. The Contractor shall be responsible for gathering all reference documents and field information required and submitting it to the Survey Section of the Seattle Public Utilities Department of the City of Seattle as noted in following sections.
- D. The City of Seattle Public Utilities Survey Section shall have ten working days to review all information submitted for conformance to this attachment of the contract before awarding payment.

II. SURVEY STANDARDS

- A. All survey work shall be done in the Washington State Lambert Grid Coordinate System using the NAD83 (1991) datum as established in accordance with chapter 58.20 Revised Code of Washington. Vertical datum shall be NAVD 1988. The references to both horizontal and vertical control shall be shown in the surveyor's notes. Exceptions to use another datum may only be approved, in writing, by the Chief Surveyor of the Seattle Public Utilities Department.
- B. All survey work shall meet a minimum of third order accuracy (1:5000) for conventional traverse. For GPS control network, the Federal Geographic Data Committee STD-007.2-1998 guide lines shall be followed meeting 2 centimeter accuracy using the City of Seattle High Accuracy GPS Control Monumentation. A statement of accuracy shall be placed on the plans.
- C. All standards or requirements concerning survey practices not covered in this document shall follow the Revised Code of Washington and the Washington Administrative Code.

III. SURVEY REQUIREMENTS

- A. The City will supply hardbound surveyor's field book(s), "Rite in the Rain" No. 350F or equivalent, to be used for the purpose of recording survey notes. If a new book is supplied, no markings shall be made on the cover and the first 3 pages shall remain unused. Pages shall be numbered beginning with the number 1 (one) on page 4. The page number shall be written on the upper right hand corner of the right half of the page. The title showing the location, the limits, and the type of the work being done (i.e. topography, traverse, levels, etc) shall be placed at the top of the left-hand page at each new location and/or phase of the project. The date and the name of the persons performing the work shall be placed opposite of the title at the top of the right hand page. All survey control information as to what was found and/or set shall be shown in the field book. The book(s) shall remain the property of the City of Seattle and will be indexed and titled by the City after the preliminary survey has been completed. All survey notes pertaining to the job shall be turned over to the Chief Surveyor of the Seattle Public Utilities Department.
- B. The horizontal control shall be noted in the field book with a drawing and associated angles and distances measured. All monuments, corners and other control points, found or set, shall be described in the notes. Horizontal control shall be based on and referenced to City of Seattle High Accuracy GPS Control Monumentation and street monuments.

The vertical control shall have a reference to a City of Seattle benchmark. The difference in datum, if any, shall be listed in the notes and on the plans. A level loop, if needed, shall be recorded or if done by electronic level, the closing error shall be recorded and all benchmarks set by the contractor shall be listed in the field book. City bench marks used shall be identified by description, elevation, and City of Seattle source, e.g. field book, data base, etc.

- C. When electronic data collection is use, the raw data file will be recorded and be submitted with all other information. The descriptor codes, alpha or numeric, for all points located, shall follow the City of Seattle standard for symbols and line work. A list of codes shall be given to the contractor upon request.

When GPS is used to locate control points, the raw data files will be submitted with all other information. The raw GPS data shall be in Trimble GPS format or Rinex export format. The GPS work will be referenced to at least one City of Seattle GPS control point. A list of these points will be provided to the contractor upon request.

- D. An electronic coordinate file shall be made in ASCII format (comma delimited) as shown:
point number,northing,easting,elevation,descriptor
- E. An AutoCAD V.13 or V.14 drawing file or a DXF file, that can be converted to an AutoCAD drawing of the completed job shall be created by the contractor. If EaglePoint or Land Development Desktop Software is used in the process of data collection-to-AutoCAD and/or coordinate geometry, then the Contractor shall provide copies of all associated files.
- F. Files may be compressed using only WinZip 95. All files pertaining to the project above shall be turned over to the Chief Surveyor of the Seattle Public Utilities Department on a 3.5" floppy or CD ROM disk before the final payment of the contract is made.